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PROVISIONAL SPECIFICATION.

Improvements in Disinfectants.

I, Dr. HUGO NOERDLINGER, of Bockenheim, near Frankfort on Main, Germany, Manufacturer, do hereby declare the nature of this invention to be as follows :—

This invention does not relate to the production of a new disinfectant, but has
5 for its object to render existing disinfectants more efficacious in their action.

It consists in mixing with disinfectants that are soluble in water, such as carbolic acid, a body that is not soluble in water and is specifically lighter than this, so as to float upon it, such as a light tar-oil, so that the disinfectant in being dissolved in or held in suspension by such vehicle, when introduced into the effluent or other
10 liquid to be disinfected, will float upon and be effectually spread over its surface.

The effective action of a disinfectant so mixed with an insoluble light vehicle, when spread over the surface of a liquid or semi liquid easily decomposable body to be disinfected, is due, firstly, to the presence of an automatically formed air
15 tight enclosure of the said easily decomposable body, whereby the atmospheric air is prevented from gaining access thereto and at the same time the gases are prevented from escaping therefrom. The absorption of such deleterious gases by the oily disinfectant covering is of great importance for disinfecting operations on a large scale, as it is quite irrational to allow gases from cesspools and sewers to
20 escape into the atmosphere through rising pipes or flues, operating as chimneys, while at the same time it is being endeavoured to prevent the pollution of the air by smoke from chimneys by enforcing the use of smoke consuming apparatus.

Secondly, the said advantage is due to the possibility of more effectually utilising the soluble constituents of the disinfectant, because, on the one hand, these soluble
25 constituents are presented as in the form of a network in the combined liquid and can consequently be readily had access to from below by the body to be disinfected which acts as a solvent. The specifically heavy solution thus formed by the disinfectant and the said body will then sink to the bottom, and fresh quantities of the solvent body will have access to the disinfectant. On the other hand, the
30 solubility is increased by the fact that the disinfectant and the liquids to be disinfected come in contact with each other upon very extended surfaces, spread over a large area. This is the more important as a number of bodies, when mixed with oil, only regain their original solubility in water when they have in the first instance taken up some water. By the large surface of contact the twofold
35 diffusion : *a*, of the water into the floating layer of oil, and *b*, of the disinfecting constituents from the layer of oil into the watery particles, is greatly facilitated.

As vehicle for the disinfectants may be employed, in addition to the light oils, also resins, paraffin (kerosine) &c. which may be used either alone or in combination with light oils for taking up the disinfectants, either with or without the employment
40 of heat.

As disinfectants capable of being dissolved in one or more of the said liquids, serving as vehicle, may be used, in addition to tar distillation products (to which may also be reckoned phenoles, pyridine aldehyde, ketones, aniline their homologues and derivatives, in particular sulpho- and oxy derivatives) chlorine bromine
45 iodine, sublimate, arsenious acid, iron chloride formic acid, benzoic acid and their homologues, thio- and oxybenzoic acid, and their homologues, sulphurous acid, quinine compounds &c.

As vehicle and at the same time as disinfectant may serve acetone, oil of

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Noerdlinger's Improvements in Disinfectants.

turpentine and other volatile oils or their stearoptenes or elaeoptenes, also esters, ether and alcohol, thio-alcohols &c.

I have hitherto only spoken of solutions of the vehicle and the disinfectant; such solutions are particularly applicable for long continued disinfections such as privies &c. where a uniform action is desired and the disinfection is more of a prophylactic nature. In the case of epidemics, for the destruction of contagious elements, in medicine, or for the sick chamber, on the other hand, it is required to have an intensine action, though, may be, of short duration, yet as powerful as possible.

In such cases there are employed with advantage emulsions of disinfectants soluble in water with one or more of the bodies serving as vehicle, with or without the use of bodies favoring emulsion, such as gum, glue, mucilage, soaps &c. These emulsions, when run on to liquids, spread with great rapidity over the surface, and at once decompose, the whole of the soluble disinfectants being rapidly and uniformly precipitated.

By this means a better mixture of the disinfectant with the body to be disinfected is attained than is possible with mechanical mixing devices.

Disinfectants soluble in water more particularly applicable as emulsion-disinfectants are salts, soluble in water, of mercury, copper, iron, lead and zinc, also manganates, permanganates, arsenites, chlorates and perchlorates, chromates, sulphites and hypochlorites, soluble in water, arsenious acid, salts of resin acid, fatty acids oxy-fatty acids, animal-fatty acids, soluble in water, also salts soluble in water of the aromatic carbon-oxycarbon- and thio-carbon-acids, the phenolates and thio-phenolates soluble in water, as also the aqueous solutions of phenoles, in salt or soap solutions, and the aqueous quinine solution &c.

Lastly, a third form of floating disinfectant can be prepared by combining the before described solution and emulsion methods. Thus a disinfectant, partly dissolved in the vehicle and partly converted into an emulsion therewith is employed. The disinfectant which is soluble in the vehicle is for this purpose first dissolved therein, and this solution is then converted into an emulsion with the aqueous solution of one or other of the above named soluble disinfectants.

The action of the substances at present known as disinfectants is considerably increased by the covering action of the vehicle used in combination therewith; the exclusion of the air greatly assists this action. Thus the disinfectant, plus the vehicle, have collectively a much more intense action than the sum of the separate actions of each component.

Dated this 11th day of January 1893.

ABEL & IMRAY,
Agents for the Applicant.

COMPLETE SPECIFICATION.

Improvements in Disinfectants.

I, Dr. HUGO NOERDLINGER, of Bockenheim, near Frankfort on Main, Germany, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention does not relate to the production of a new disinfectant, but has for its object to render existing disinfectants more efficacious in their action. It consists in mixing with disinfectants that are soluble in water, such as carbolic acid, a body that is not soluble in water and is specifically lighter than this, so as to float upon it, such as a light tar-oil, so that the disinfectant in being dissolved in or held in suspension by such vehicle, when introduced into the effluent or other liquid to be disinfected, will float upon and be effectually spread over its surface.

The effective action of a disinfectant so mixed with an insoluble light vehicle,

Noerdlinger's Improvements in Disinfectants.

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 10 by smoke from chimneys by enforcing the use of smoke consuming apparatus.

Secondly, the said advantage is due to the possibility of more effectually utilising the soluble constituents of the disinfectant, because, on the one hand, these soluble constituents are presented as in the form of a network in the combined liquid and can consequently be readily had access to from below by the body to be disinfected;
 15 which acts as a solvent. The specifically heavy solution thus formed by the disinfectant and the said body will then sink to the bottom, and fresh quantities of the solvent body will have access to the disinfectant. On the other hand, the solubility is increased by the fact that the disinfectant and the liquids to be disinfected come in contact with each other upon very extended surfaces, spread
 20 over a large area. This is the more important as a number of bodies when mixed with oil, only regain their original solubility in water when they have in the first instance taken up some water. By the large surface of contact the two-fold diffusion; *a*, of the water into the floating layer of oil, and *b*, of the disinfecting constituents from the layer of oil into the watery particles, is greatly
 25 facilitated.

As vehicle for the disinfectants may be employed, in addition to the light oils, also resins, paraffin (kerosine) &c. which may be used either alone or in combination with light oils for taking up the disinfectants, either with or without the employment of heat.

30 As disinfectants capable of being dissolved in one or more of the said liquids, serving as vehicle, may be used, in addition to tar distillation products (to which may also be reckoned phenoles, pyridine, aldehyde, ketones, aniline their homologues and derivatives, in particular sulpho and oxy derivatives), chlorine, bromine, iodine, sublimates, arsenious acid, iron chloride, formic acid, benzoic acid and their
 35 homologues, thio- and oxybenzoic acid, and their homologues, sulphurous acid, quinine compounds &c.

As vehicle and at the same time as disinfectant may serve acetone, oil of turpentine and other volatile oils or their stearoptenes or elacoptenes, also esters, ether and alcohol, thio-alcohols &c.

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In such cases there are employed with advantage emulsions of disinfectants soluble in water with one or more of the bodies serving as vehicle, with or without the use of bodies favoring emulsion, such as gum, glue, mucilage, soaps &c. These
 50 emulsions, when run on to liquids, spread with great rapidity over the surface, and at once decompose, the whole of the soluble disinfectants being rapidly and uniformly precipitated.

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Noerdlinger's Improvements in Disinfectants.

sulphites and hypochlorites, soluble in water, arsenious acid, salts of resin acid, fatty acids, oxy-fatty acids, animal-fatty acids, soluble in water, also salts soluble in water of the aromatic carbon-oxy-carbon- and thio-carbon-acids, the phenolates and thio-phenolates soluble in water, as also the aqueous solutions of phenoles, in salt or soap solutions, and the aqueous quinine solution &c.

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Lastly, a third form of floating disinfectant can be prepared by combining the before described solution and emulsion methods. Thus a disinfectant, partly dissolved in the vehicle and partly converted into an emulsion therewith is employed. The disinfectant which is soluble in the vehicle is for this purpose first dissolved therein, and this solution is then converted into an emulsion with the aqueous 10
solution of one or other of the above named soluble disinfectants.

The action of the substances at present known as disinfectants is considerably increased by the covering action of the vehicle used in combination therewith; the exclusion of the air greatly assists this action. Thus the disinfectant, plus the vehicle, have collectively a much more intense action than the sum of the separate 15
actions of each component.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is :—

1. The method of improving the disinfecting action of disinfectants by mixing 20
them with a body that is insoluble in water and is specifically lighter than the same, and then pouring such mixture upon the surface of the body to be disinfected, substantially as described.

2. As a new manufacture, a compound consisting of the mixture of a disinfectant soluble in water and a body that is insoluble in water but is lighter than the same, 25
substantially as described.

Dated this 7th day of September 1893.

ABEL & IMRAY,
Agents for the Applicant.

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